

**PNP PRE-BIASED SMALL SIGNAL DUAL SURFACE MOUNT TRANSISTOR**

**Features**

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

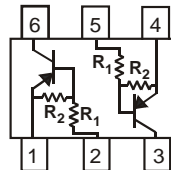
| R1 (NOM) | R2 (NOM) |
|----------|----------|
| 10kΩ     | 10kΩ     |

**Mechanical Data**

- Case: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (③)
- Weight: 0.006 grams (Approximate)



Top View



Device Schematic

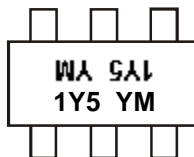
**Ordering Information** (Notes 4 & 5)

| Product      | Compliance | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|--------------|------------|---------|--------------------|-----------------|-------------------|
| ADA114EUQ-7  | Automotive | 1Y5     | 7                  | 8               | 3,000             |
| ADA114EUQ-13 | Automotive | 1Y5     | 13                 | 8               | 10,000            |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to [http://www.diodes.com/quality/product\\_compliance\\_definitions/](http://www.diodes.com/quality/product_compliance_definitions/).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**

SOT363



1Y5 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: D = 2016)  
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | D    | E    | F    | G    | H    | I    | J    | K    | L    | M    | N    | O    | P    | Q    |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

### Absolute Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

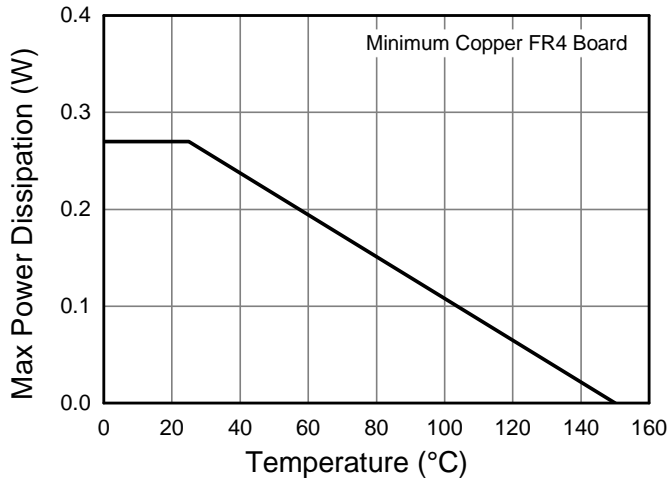
| Characteristic                           | Symbol              | Value      | Unit |
|------------------------------------------|---------------------|------------|------|
| Supply Voltage (1) to (6) and (4) to (3) | V <sub>CC</sub>     | -50        | V    |
| Input Voltage (1) to (2) and (4) to (5)  | V <sub>IN</sub>     | +10 to -40 | V    |
| Output Current                           | I <sub>O</sub>      | -50        | mA   |
| Output Current                           | I <sub>C(MAX)</sub> | -100       | mA   |

### Thermal Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

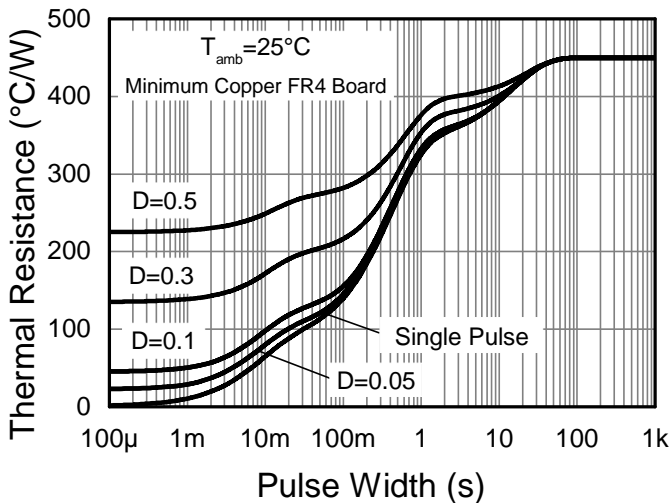
| Characteristic                                       | Symbol                            | Value       | Unit |
|------------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Notes 6 & 7)                      | P <sub>D</sub>                    | 270         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 6) | R <sub>θJA</sub>                  | 450         | °C/W |
| Operating and Storage Temperature Range              | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

Notes: 6. Mounted on FR4 PC Board with minimum recommended pad layout.  
 7. 150mW per element must not be exceeded.

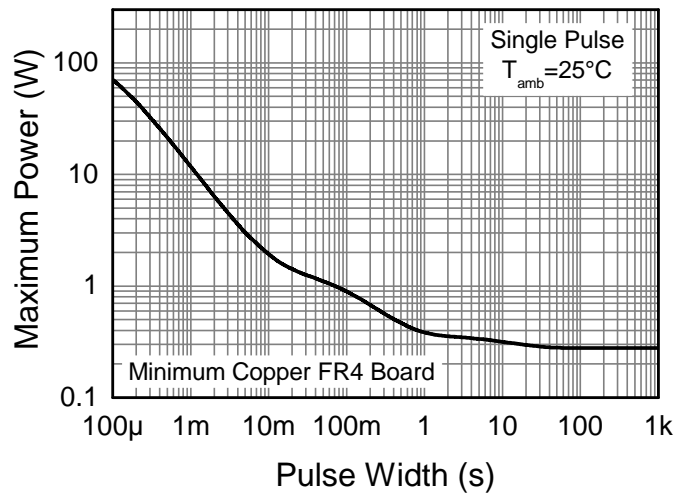
**Thermal Characteristics and Derating Information**



**Derating Curve**



**Transient Thermal Impedance**

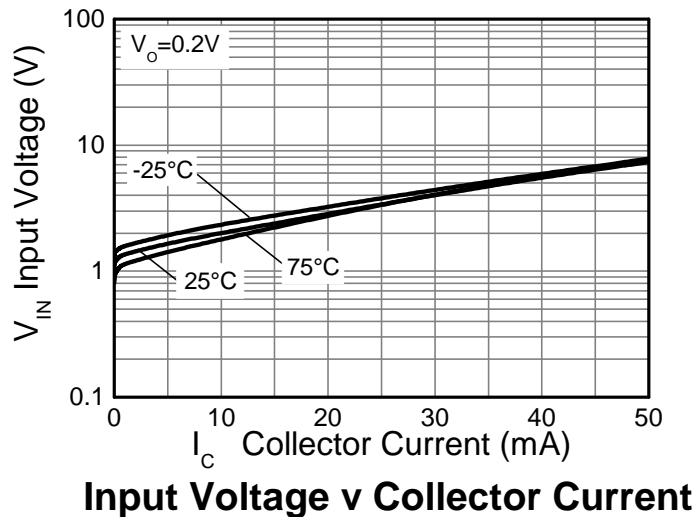
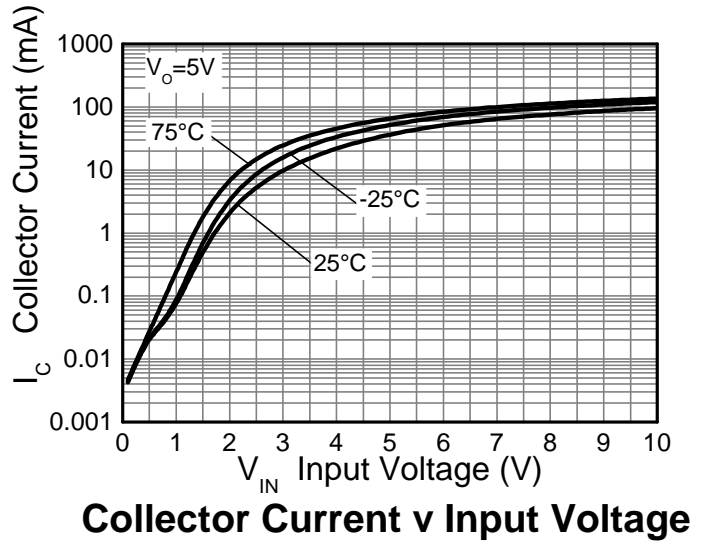
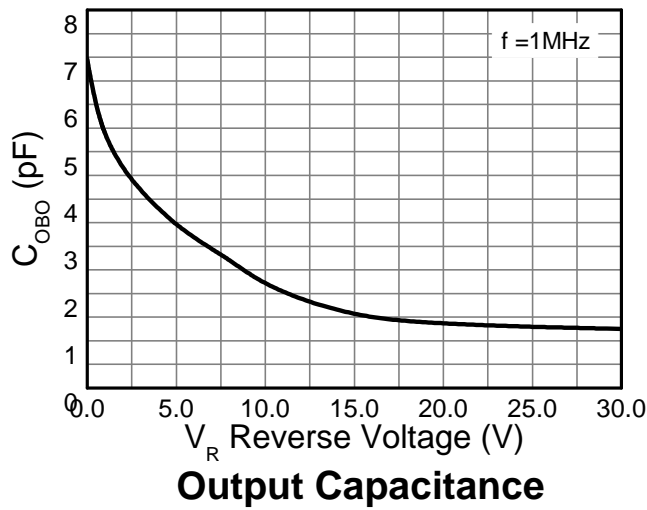
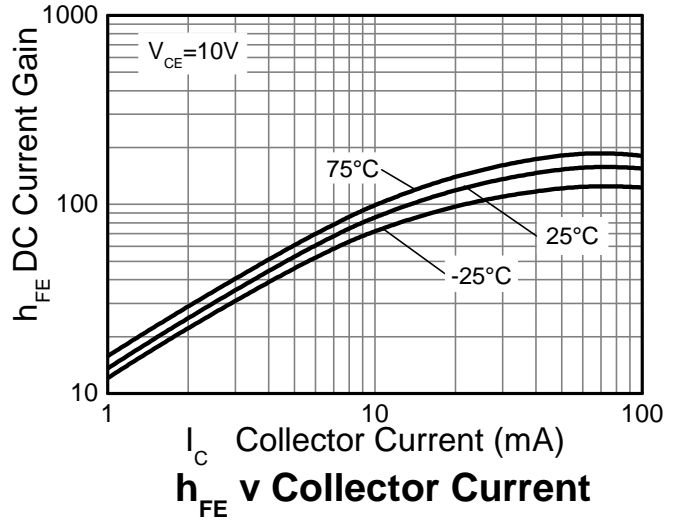
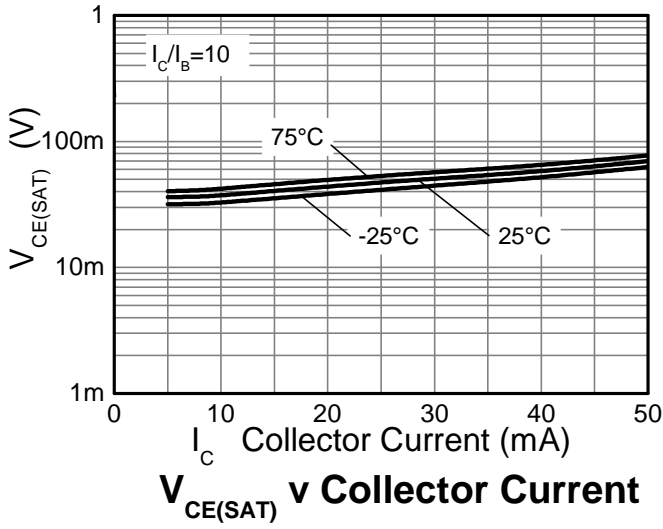


**Pulse Power Dissipation**

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

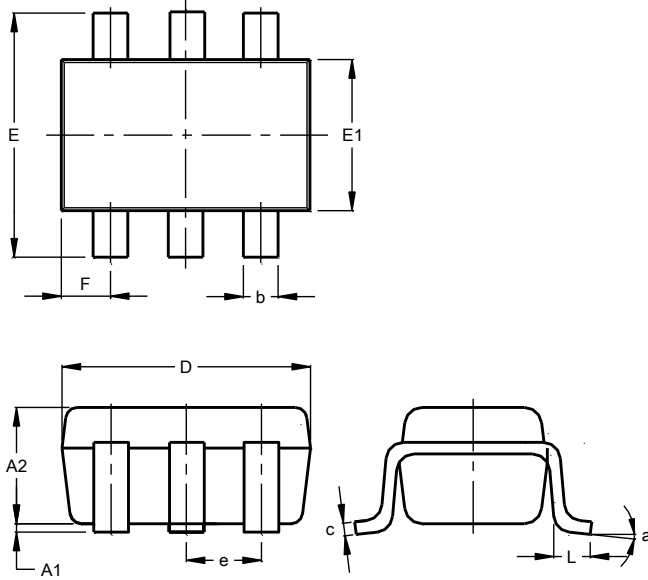
| Characteristic                             | Symbol                         | Min  | Typ  | Max   | Unit | Test Condition                                            |
|--------------------------------------------|--------------------------------|------|------|-------|------|-----------------------------------------------------------|
| Input Voltage                              | V <sub>I(OFF)</sub>            | -0.5 | -1.1 | —     | V    | V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA            |
|                                            | V <sub>I(ON)</sub>             | —    | -1.9 | -3.0  |      | V <sub>O</sub> = -0.3, I <sub>O</sub> = -10mA             |
| Output Voltage                             | V <sub>O(ON)</sub>             | —    | -0.1 | -0.3  | V    | I <sub>O</sub> /I <sub>I</sub> = -10mA / -0.5mA           |
| Input Current                              | I <sub>I</sub>                 | —    | —    | -0.88 | mA   | V <sub>I</sub> = -5V                                      |
| Output Current                             | I <sub>O(OFF)</sub>            | —    | —    | -0.5  | μA   | V <sub>CC</sub> = -50V, V <sub>I</sub> = 0V               |
| DC Current Gain                            | G <sub>I</sub>                 | 30   | —    | —     | —    | V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA               |
| Input Resistor (R <sub>1</sub> ) Tolerance | ΔR <sub>1</sub>                | -30  | —    | +30   | %    | —                                                         |
| Resistance Ratio Tolerance                 | R <sub>2</sub> /R <sub>1</sub> | -20  | —    | +20   | %    | —                                                         |
| Gain-Bandwidth Product                     | f <sub>T</sub>                 | —    | 250  | —     | MHz  | V <sub>CE</sub> = -10V, I <sub>E</sub> = -5mA, f = 100MHz |

**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



**Package Outline Dimensions**

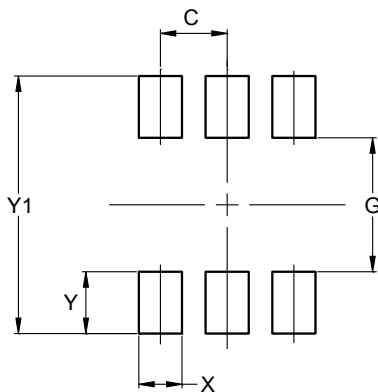
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



| SOT363                      |           |      |       |
|-----------------------------|-----------|------|-------|
| Dim                         | Min       | Max  | Typ   |
| A1                          | 0.00      | 0.10 | 0.05  |
| A2                          | 0.90      | 1.00 | 1.00  |
| b                           | 0.10      | 0.30 | 0.25  |
| c                           | 0.10      | 0.22 | 0.11  |
| D                           | 1.80      | 2.20 | 2.15  |
| E                           | 2.00      | 2.20 | 2.10  |
| E1                          | 1.15      | 1.35 | 1.30  |
| e                           | 0.650 BSC |      |       |
| F                           | 0.40      | 0.45 | 0.425 |
| L                           | 0.25      | 0.40 | 0.30  |
| a                           | 0°        | 8°   | --    |
| <b>All Dimensions in mm</b> |           |      |       |

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.650         |
| G          | 1.300         |
| X          | 0.420         |
| Y          | 0.600         |
| Y1         | 2.500         |

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